

Aspects to be covered:

- ▲ Effect of light, air, water, temperature on plant growth
- ▲ Soil anchors most plants and provides minerals for plant growth via roots
- ▲ Roots take up water and dissolved nutrients and transport it via stem to leaves and flowers
- ▲ Plant life cycle – seeds, germination, growth and flowering, pollination, seeds and dispersal
- ▲ Parts of flowers – stigma, stamen, sepal, petal ...
- ▲ Adaptation of plants to different habitats such as grass, wood, water
- ▲ need for management to protect variety of plants on MG

Activities will take place:

- ▲ In copse
- ▲ By ponds (not pond dipping but will fish some plants out)
- ▲ On open grassland – gives most scope for more detailed study of plants themselves
- ▲ In wetland

Plan for the morning

Intro on arrival; safety, various habitats they will study. Then leave things on seat by pond 1 and split into 2 groups

Group \ Time	9.30 -10.25	10.25 - 1035	10.35 – 11.30
1	Copse and pond	Break	Grassland and wetland
2	Grassland and wetland		Copse and pond

Copse

Few flowers out now – what were they? (bluebells, primroses) Why are they early?

Need for light.

Trees- tall grow up for light, mostly deciduous, shed leaves (not yew) in winter. Leaves decay with help of insects and fungi and help to form soil which 'feeds' trees.

Investigate leaf litter and / or mirror walk under trees.

Coppiced hazel – regrowth; managed for poles etc by man

Ponds

Usually we think of ducks, fish and insects but ponds have plants adapted to wet conditions.

By pond edge – water mint and flag iris

In pond – floating - pond fringe or bog bean; submerged – hornwort (oxygenator)

Grassland

What plants need to grow - light/sun/temperature, air, water/drainage, soil/minerals/ nutrients.

How do plants get or use these – parts of plant.

Water mostly from soil via roots (plus dissolved minerals).

From roots via stems to buds, leaves and flowers.

Most plants need well drained soil and air round roots as well as water (compare pond)

Air/light/sun on leaves – photosynthesis.(simply) and open v. shade

Examine a common plant which will be pulled up but use this action to explain the need for protection of wild flowers on the site.

Parts of plant as far as needed.

How many different sorts of grasses and other flowers can you find (do not pick) - flower recording form (possibly adult could record.) Pollination and seeds – bees and other insects.

Wetland

Identify some of plants with one of their characteristics eg watermint, water cress, figwort, willow herb, brooklime, marsh marigold (king cup), flag iris...

Copse

The activities here will focus on

- ↗ plants need **light** to grow
- ↗ rotting leaves and wood break down to form **soil** which provide 'food' for the plants and trees to grow

There are few flowers now in the copse (may be look at the campion and seeds in open bit of copse)

What was flowering earlier in the year? --- **bluebells and primroses**

Why did they flower early? ---before leaves came out

Why? ---for **light** too dark now for most flowers

The trees shed (drop)their leaves in winter – they are **deciduous** trees. **Evergreens** and **conifers** what are they?

Spend a few minutes looking at **different leaves** – let them pick / collect single leaves. They should find hazel, ash, lime, hawthorn (warn about thorns).....look at different shapes and veins and let them feel if rough or smooth. Sheets to compare shapes.

What happens to the leaves when they fall off ? ----rot down and eventually form **soil**. How do they rot? Fungi, worms and woodlice etc

With trowels collect a bit of leaf litter and top soil; put in pot (one between 2 or 3) to examine and smell, They can also look under small logs etc and at decaying wood.

The trees take up water and food / nutrients from the soil as they grow.

The trees grow up tall and quite straight for the **light**

Mirror Walk

Revise parts of a tree: roots, trunk, branches, twigs, leaves and they have flowers and fruits, berries or seeds. New term **canopy**.

Hold the mirrors horizontally below chin and look into it to see the tree tops (**canopy**) and the sky. Walk along the board walk (one side) Do it in twos ; partner guides.

Have a look at the coppiced hazels in copse. They can be cut right down and grow up again – **coppiced** – hence the name **copse**?

How tall are the hazels? How long ago do they think it was cut down? (*ours about 4 to 7 years – S. end cut most recently*) Coppice cycle. (*6 to 10 years depending how thick you want the poles*). What did people use the hazel for? ---*hurdles (explain) and wattle and daub in old houses, tool handles....*

Look at yew tree – **poisonous** 'berries'.

How long do trees live?.....just discuss

Ash dieback -*some saplings may show signs of dead ends to branches*

Equipment

Leaf identification sheets, pots to put leaf litter/soil in, trowels (provided by helpers) to collect this, mirrors.

Ponds

The activities here will focus on :

- ↗ all plants need **water** to grow
- ↗ some plants can **grow in water** (whereas most need soil and air)
- ↗ **leaf shapes** – two main groups of leaf shapes (monocots and dicots ie parallel veined leaves and branching veined leaves)

By the ponds - all plants need water to grow – get them to name other sorts of wet places ---bogs, streams, rivers.... you will look at/have looked at our wetland in field 1.

You are going to investigate plants that grow in and on the edge of ponds

Where do the pond plants actually live?

Bank Water Surface Submerged

Look at the different plants around the **pond edge** and identify some:

Flag iris, rushes, water mint, willow, pendulous sedge – all these like to grow in wet soil.

Adult (or children if they have a camera) take photos.

Compare flag iris leaves with those of eg water mint – how are they different?

Some plants have **parallel veins** and others **branching veins** and usually rounder leaves.

Two different groups of plants. Which of the other ones they have looked at are like flag iris? (rush and sedge)

Use rake to fish out some **floating plants** – mainly **pond fringe** in Pond 2 and put them in the white trays with some water as there will probably be insects on them. **Bog bean** in pond 1 floats but also roots in the bank and mud on bottom. Also look at some **hornwort** which grows under the surface – **submerged**

Let the children see what is there then explain that floating plants need light and air but get their 'food' through their roots which hang down in the water or reach the mud on the bottom .

Submerged plants like hornwort get some light through the water and gives out oxygen into the water which makes the water better for the creatures which live in it.

Equipment

Pond net or rake, white tray, 'bucket' on string to get water to put in tray

Grassland

The focus here will be on :

- ▲ parts of plant.
- ▲ what plants need to grow - light/sun/temperature, air, water/drainage, soil/minerals/nutrients.
- ▲ How plants get or use these.

Parts of plant as far as needed – roots, stem, leaves, flowers, seeds

Adult pull up one plant common plant to examine but use this action to explain the need for protection of wild flowers on the site.

What do plants need to grow?

Water mostly from soil via roots (plus dissolved minerals from soil for 'food').

From roots via stems to buds, leaves and flowers.

Most plants need **well drained soil** and **air** round roots as well as water (compare pond).

Air/light/sun on leaves – photosynthesis (simply) --- plants take in carbon dioxide from the air and use the energy from sunlight to turn it into sugars (you put on weight when you eat sugar!) which help them to grow. They give out oxygen

Which of the 3 sites you are looking at today get the most light? ---this grassland in the open. So lots of different flowers and grasses grow here.

Explain again about not picking / pulling up plants but explain they can pick common ones for study.

In pairs pick one of each of as many **grasses** as they can find (try not to pull up by roots)
-look at together and record number. Grasses are flowering plants...pollen and hay fever.....wind pollinated

How many different sorts of **flowers** (except grasses) can you find (each pair pick only one of each sort and only if there are a lot of them). use flower recording form – Adults to record. Talk about plants they found

Recording form for flowers – adult could write in names – one sheet per group.

Colour	Short or tall	A lot or just a few		Name or describe
		Lots	Few	

Pollination and seeds – bees and other insects, wind pollination

Each pick one cranesbill or buttercup flower to look at parts – petals, sepals, stamens (pollen), stigma, style, ovary (seeds)

Equipment: flower recording forms (see below) and blank paper for adults.

Labels for plants in wetland with pegs to attach

Move to Wetland looking at wildflower grassland **notice board** on way

Explain where water goes into moat **Plants here should be labelled before start of visit**

Explain what wetland is like – muddy as water soaks into soil; all plants here like wet conditions but grow in soil or mud in stream bed.

Find plants: which will be labelled (willow herb, watermint, flag iris, figwort, brooklime, king cup, water cress...depending on what is there). Adults write down their names and at least one fact about each plant from what children say.

Flower recording form for grassland